

Work Order ID 80834

March-01-12 10:10:43 AM

80834

Page 1

Item ID: D206-667-201

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Crosstube Aft

Start Date: 01/03/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 21/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: MLJ

Date: 12/03/01

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
----------	--------------

D206-667-241	Rev C (DEO)
--------------	-------------

DSI 9471	Rev A
----------	-------

100

0.00

1000

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-201 CHG004

Sc/12/01/20

JA for MLJ 12-4-20

110

0.00

110

Packaging

Packaging

Memo

0.00

Packaging

MO 12-4-2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 80834

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Page 2

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N900040100

Setup Start ***NS1***

Revision ID:

Item Name: Crosstube Aft

Stop ***NS2***

Start Date: 01/03/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 21/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

120

0.00

120

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D206-667-241 using CNC bender program 206B-AF and Folio FT _____

RM 12-3-30
TW

130

QC15- Crosstube Dimensional Check

0.00

130

QC

Memo

0.00

Quality Control

S 12/03/30

** tube bent with only 9 passes **
** see Attached Email for acceptable **
8/12/30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Aft

Start Date: 01/03/2012 Start Qty: 1.00

1

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Required Date: 21/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	Crosstubes	0.00							
140									
Crosstubes	Memo	0.00							
Crosstubes	1-Drill pilot holes (3/16") as per Dwg D206-667-241 using drill Jig DT8575 & DT8576								
	2-Drill & ream holes as per Dwg D206-667-241 using drill Jig DT8575 & DT8576. (DRILL 3 HOLES ON BOTH SIDES)								
	3-Flip tube and switch drilling Jigs from right to left, left to right. Locate tube using "T" pins off holes drilled in previous step.								
	4-Drill pilot holes (3/16") as per Dwg D206-667-241 using drill Jig DT8575 & DT8576								
	5-Drill & ream holes as per Dwg D206-667-241 using drill Jig DT8575 & DT8576. Check dimensions between holes on all four sides to ensure proper alignment. Use DT8583 & 8584 SUPPORT Jigs. (DRILL 3 HOLES ON BOTH SIDES)								
	6-Drill rivet holes as per Dwg D206-667-241 using drill Jig DT8788								
	7-C'sink holes as per Dwg D206-667-241								
	8-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-241								
	9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-241 Inside of Cuff (Do not engrave on outside of tube)								

MO/RM 12-4-2

FW

12-4-2

MO

12-4-2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Work Order ID 80834***80834***

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Aft

Start Date: 01/03/2012 Start Qty: 1.00

1

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Required Date: 21/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

150 Crosstubes Chemical Conversion

0.00

*W**12-4.2****150***

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

160 QC3- Inspect Part Finish

0.00

160

QC

Q7

Memo

0.00

Quality Control

8.2/4/10

170 QC5- Inspect part completeness to step on W/O

0.00

170

QC

Memo

0.00

Quality Control

*8.2/4/10**(+1)*

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Work Order ID 80834***80834***

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Item ID: D206-667-201

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Aft

Start Date: 01/03/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 21/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

180 Outsource process - NDT per QSI038 4.1

0.00

180

Outsource2

Memo

0.00

Outsource process - NDT

CROSSTUBES

P/O: 16682

CZ 12/04/11 ①

190

0.00

190

Packaging

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

SP 12-04-11

200

QC6- Inspect dimensions to drawing

0.00

200

QC

Memo

0.00

Quality Control

Inspect for damage & ensure results are as per Dwg D206-667-201

① W/W 12-04-11

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Aft

Start Date: 01/03/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 21/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

0.00

210

SprayPaint

0.00

SprayPaint

Memo

Spray Painting

1-Mask Threaded holes

2-Prime inside and outside crosstube as per QSI 005 4.2

3-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME: 121077

Start Time: 6:30

Finish Time: 7:00

PAINT: 120985

Start Time: 11:00

Finish Time: 11:30

AL 12 - 4 - 13

220

QC14- Inspect Spray Paint

0.00

220

QC

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

W 12 04 14 ①

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Work Order ID 80834

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March-01-12 10:10:43 AM

Item ID: D206-667-201

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Aft

Start Date: 01/03/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 21/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	Crosstubes	0.00							
230									
Crosstubes	Memo	0.00							
Crosstubes	1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe								
	2-Install supports with Proseal 890 per DSI9565 and QSI 015 A/R Proseal 890 Batch: <u>121287</u>								
	3- Torque bolts as per dwg <u>12.04.16</u>								
240	QC5- Inspect part completeness to step on W/O	0.00							
240									
QC	Memo	0.00							
Quality Control									
250	Pick Kit	0.00							
250									
Packaging	Memo	0.00							
Packaging									

12-04-15

12-04-19

12-04-20

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 80834

80834

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March-01-12 10:10:43 AM

Item ID: D206-667-201 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Crosstube Aft
 Start Date: 01/03/2012 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 21/03/2012 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
260	QC4- 100% Inspect kits for completeness	0.00							
260		0.00							
QC	Memo								
Quality Control									
270	Packaging	0.00							
270		0.00							
Packaging	Memo								
Packaging	Identify and pack for shipping as per PPPD206-667-201								
	Location: <u>63</u>								
	PPP Rev: <u>3</u>								
280	QC21- Final Inspection - Work Order Release	0.00							
280		0.00							
QC	Memo								
Quality Control									

12/1/20
 12/4/23
 R 12-4-23

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

• March-01-12 10:10:47 AM

80834

D206-667-201

Required Date: 21/03/2012

Required Qty: 1.00

IPP REV:B

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D206-667-201TRN		Manufactured	No		78817	110	Each	0.0000	1	(1)	MO	12-3-30	
D206-667-201TRN									**				
Crosstube Turning Detail													
D2891-1		Manufactured	No			230	Each	8.0000	2	2		12.04.15	
D2891-1									**				
2.25 Support													
R# 80160													
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG052		8							
				72822		1							
				75176		7							
D3595-063-395		Manufactured	No			230	Each	10.0000	4	4		12.04.15	
D3595-063-395									**				
RUBBER CUSHION													
R# 82223													
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				MAT052		10							
				74300		10							
MS21920-20		Purchased	No			230	Each	72.0000	4	4		12.04.15	
MS21920-20									**				
Clamp (per MIL-DTL-8783C)													
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG050		72							
				116799		8							
				120475		14							
				120676		50							

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

March-01-12 10:10:47 AM

Work Order ID: 80834

Parent Item: D206-667-201

Parent Item Name: Crosstube Aft

80834

D206-667-201

Start Date: 01/03/2012

Required Date: 21/03/2012

Start Qty: 1.00

Required Qty: 1.00

AN5-10A

Purchased

No

250

Each

514.0000

10

10

AN5-10A

Bolt

**

Location

Loc Qty

Loc Code

ST337

514

118191

80

119547

14

119981

20

120630

50

120717

50

120770

300

AN5-30A

Purchased

No

250

Each

86.0000

10

10

AN5-30A

BOLT

**

Location

Loc Qty

Loc Code

ST339

86

117514

7

120423

75

120717

4

AN5-32A

Purchased

No

250

Each

250.0000

4

4

AN5-32A

Bolt

**

Location

Loc Qty

Loc Code

ST339

250

119328

100

119862

50

120423

75

120717

25

AN960JD516

NAS1149D0563J

Purchased

No

250

Each

0.0000

20

20

AN960JD516

Washer

**

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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Picklist Print

March-01-12 10:10:47 AM

Work Order ID: 80834

80834

Parent Item: D206-667-201

D206-667-201

Parent Item Name: Crosstube Aft

Start Date: 01/03/2012

Required Date: 21/03/2012

Start Qty: 1.00

Required Qty: 1.00

D2872-043

Manufactured No

250

Each

1.0000

2

**

D2872-043

Nut Plate Assembly

Location

Loc Qty

Loc Code

ST025

1

28918

1

Manufactured No

250

Each

1.0000

2

**

D2872-045

D2872-045

Nut Plate Assembly

Location

Loc Qty

Loc Code

ST019

1

28919

1

Manufactured No

250

Each

6.0000

1

**

D3039-3

D3039-3

Centre Drill

Location

Loc Qty

Loc Code

ST024

6

14761

6

Purchased No

250

Each

1,700.000

10

**

MS21042L5

MS21042L5

Nut

Location

Loc Qty

Loc Code

ST300

1700

116105

5

116548

43

117611

42

118179

110

119109

1500

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

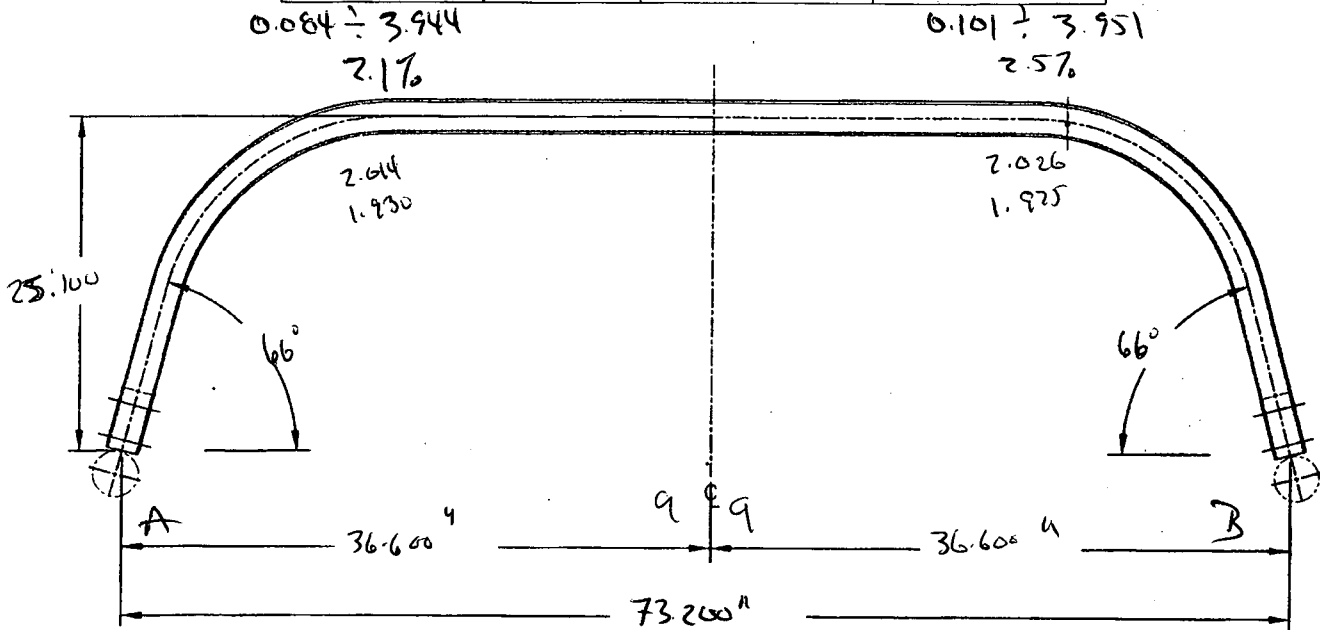
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	80834
Description: Crosstube High Aft (206B)		Part Number:	D206-667-201
Inspection Dwg: D206-667-241 Rev: C		Page 1 of 1	

Required Dimension	Min	Max
Height	24.91	25.17
1/2 Span	36.47	36.73
Angle	65	67
Total Span	72.95	73.45



Comments
Side A = 2.1% crush @ 9 Passes
Side B = 2.5% crush @ 9 Passes
Acetate see Attached Email.

QC15 Inspection	S
Date	12/02/30

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.12.04	24-98 was 24.48	KJ/JM	
C	11.10.12	Dimensions updated per Dwg Rev C	KJ	

W/O:		WORK ORDER CHANGES					
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Item	Qty -241	Part Number	Description
1	X	D206-667-241	CROSSTUBE ASSEMBLY (206B HIGH AFT)
2	1	D6003-102	CROSSTUBE
3	2	D2891-1	SUPPORT
4	4	D3595-063-395	RUBBER CUSHION
5	4	MS21920-20	CLAMP (OR MS21920-21)
6	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6003-102
FINISHED LENGTH = 100.60±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-241" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 22.5 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 12 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS MECHANISMS ARE LOCATED ON CROSSTUBE CLAMPS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

UNDER REVIEW

RELEASED

DEO ATTACHED

C	REFORMAT/REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN C5-3, C4-3, D3-3); RELOCATED FLAG #6 (ZN A7-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	RF	D206-667-241	SHEET 1 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASSY (206B HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

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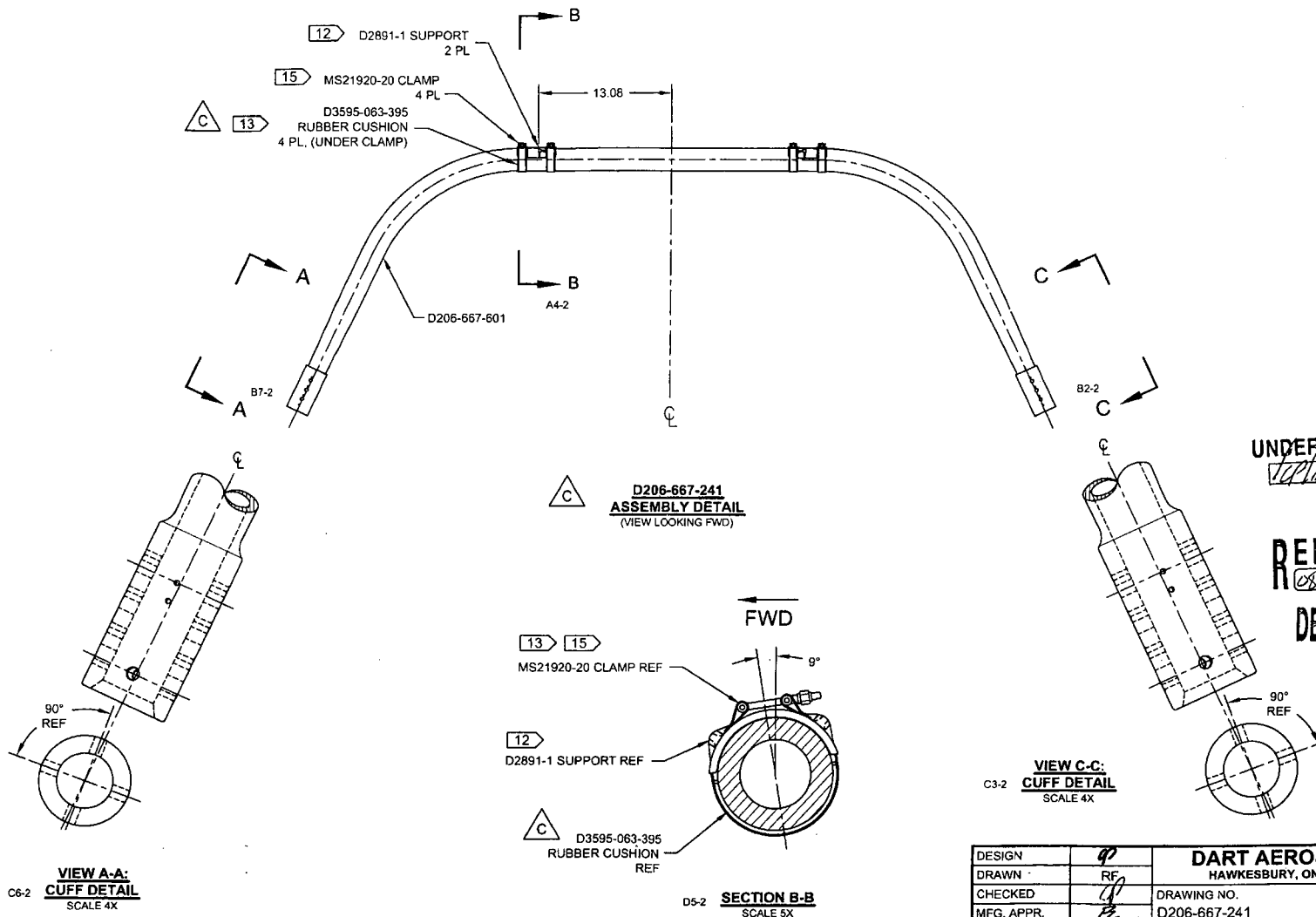
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



80834

UNDER REVIEW
08/11/06 OK 0110853

RELEASED
08/11/06

DEO ATTACHED

DESIGN	97	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	RF	D206-667-241	SHEET 2 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASS'Y (206B HIGH AFT)	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

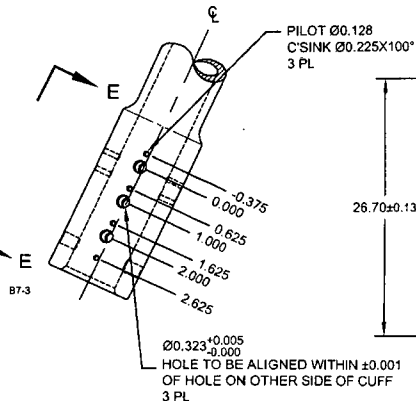
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

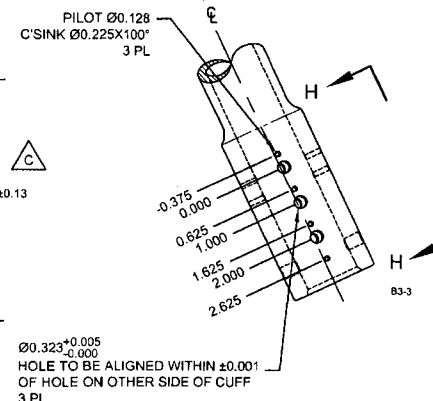
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

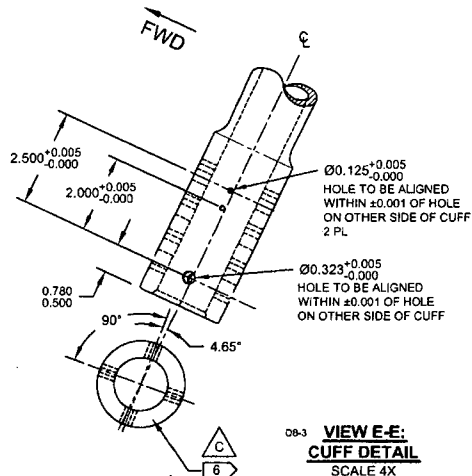
C6-3 **DETAIL D**
SCALE 4X
(VIEW LOOKING FWD)



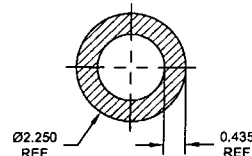
C3-3 **DETAIL G**
SCALE 4X
(VIEW LOOKING FWD)



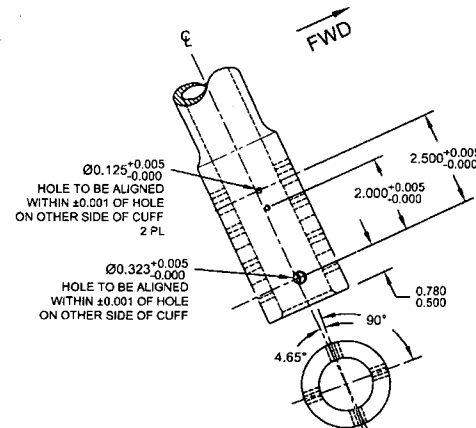
D206-667-601
BENDING AND DRILLING DETAIL
(VIEW LOOKING FWD)



C6-3 **VIEW E-E:**
CUFF DETAIL
SCALE 4X



D4-3 **SECTION F-F**
SCALE 5X



UNDER REVIEW

11/06/13 OK UP B.013

RELEASED
DEO ATTACHED

D1-3 **VIEW H-H:**
CUFF DETAIL
SCALE 4X

80834

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	RF	D206-667-241	SHEET 3 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASS'Y (206B HIGH AFT)	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

D

C

B

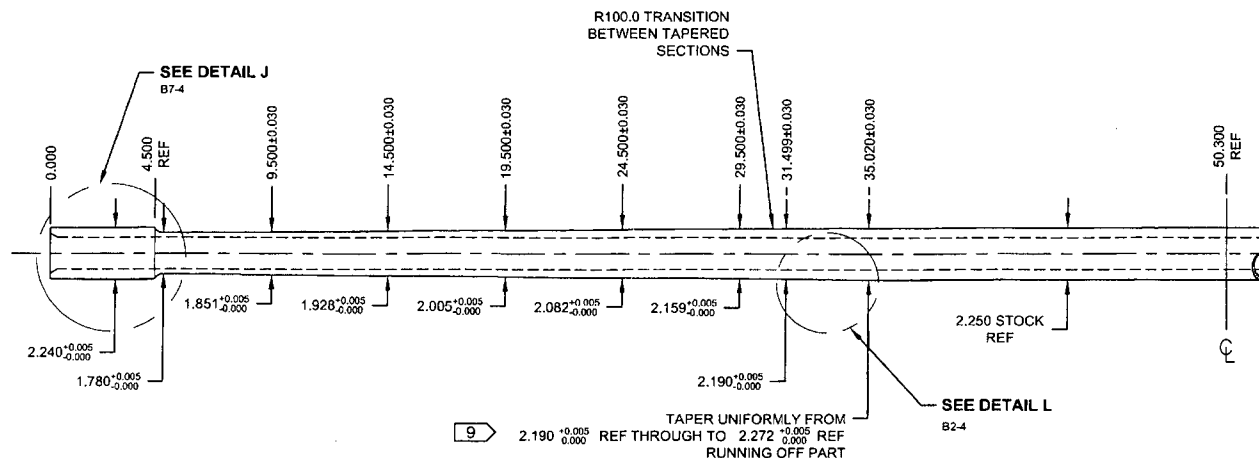
A

D

C

B

A

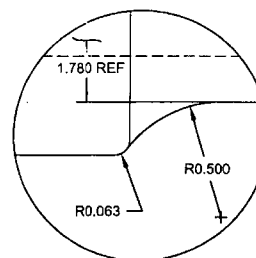


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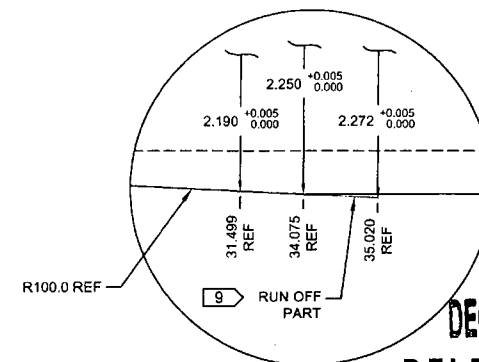
UNDER REVIEW

11/06/17 OK H.08.13

TURNING DETAIL

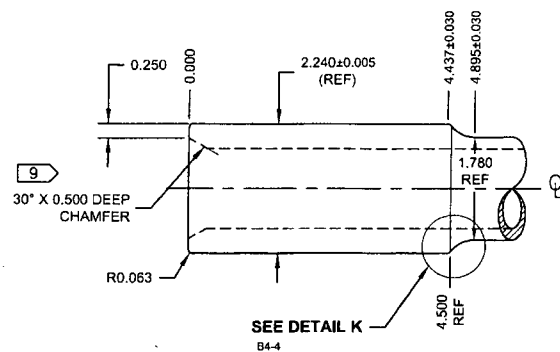


**DETAIL K:
CUFF TRANSITION**
NOT TO SCALE



**DETAIL L:
TAPER RUN-OFF**
NOT TO SCALE

DEO ATTACHED
RELEASED



**DETAIL J:
CROSSTUBE CUFF**
NOT TO SCALE

DESIGN	9	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RE		
CHECKED	17	DRAWING NO.	REV. C
MFG. APPR.	17	D206-667-241	SHEET 4 OF 4
APPROVED	17	TITLE	SCALE
DE APPR.	17	CROSSTUBE ASS'Y (206B HIGH AFT)	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DRAWING NO. D206-667-241	TITLE CROSSTUBE ASS'Y (206B HIGH AFT)	REV. C	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-241-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN 92	CHECKED AS	MFG. APPR. M	APPROVED MD		DE APPR. H		
DATE 11.07.15	DATE 11.08.22	DATE 11.08.22	DATE 11/08/22		DATE 11.08.22		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -241	Part Number	Description
6	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

6	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-08-23
MD

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 1218

CLIENT DART NEWSPLACE DATE 04/11/2012 PAGE 1 OF 1
ATTENTION LINDA LACELLE ACUREN JOB NO. 100-12-00097 TIME AM 10 PM
ADDRESS 1270 ABERDEEN ST. POWO No. 16672
HAWKES BURY, ON. WORK LOCATION SAVE
ACCEPTANCE STD ASTM 1417/AS-038 REV./DATE 2008
PROJECT F.P.I. on cross tubes and machined parts
ITEM(S) EXAMINED (6) machined parts - 6 cross tubes

JOB DESCRIPTION PROCEDURE NO. LT0002 REV./DATE 2008 TECHNIQUE NO. LT-1042 REV./DATE 2008
PART NO. SEE RESULTS MATERIAL ALUMINUM THICKNESS VARIABLE
SCOPE A WET FLOUORESCENT LIQUID PENETRANT STAINLESS
WAS CARRIED OUT ON 100% EXTERNAL SURFACE

TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMUL
FAMILY BRAND MAGNAFLUX BLACK LIGHT S/N 10459 ☐ OUTPUT > 1000 μ W/CM² ☐ AMBIENT <
PENETRANT ZL67 MINIMUM DWELL TIME 45 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ S
PENETRANT REMOVER 120 MINIMUM DRY TIME >10 MIN. OTHER L431VC
DEVELOPER SDS2 MINIMUM DWELL TIME 10 MIN. LIGHT METER S/N 1098806 CAL DUE DATE
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY 07/29/2012

TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☒ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE MET
SURFACE TEMPERATURE ☐ < - 4°C/ 20°F ☐ - 4°C/ 20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F

RESULTS- ☒ METRIC ☐ IMPERIAL

W.O. # CROSSTUBE
1 79110 " ☒
1 79109 " ☒
1 80833 " ☒
1 80834 " ☒
6 80815 ROD END ASSEMBLY ☒
1 81580 CROSSTUBE ☒
1 81579 " ☒
12-04-11

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, express or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE Andrew Sheldon DTR # E-63891
TECHNICIAN (SIGNATURE): [Signature] SIGNATURE
NAME (PRINT): Mike Litwinski REPORT REVIEWED BY:
1st TECHNICIAN 2nd TECHNICIAN
CGSB LEVEL 1 SNT LEVEL 1 CGSB LEVEL 1 SNT LEVEL 1
CGSB REG. No 6606 CGSB REG. No 6606

Eric Downing

From: David Shepherd <dshepherd@dartaero.com>
Sent: March 30, 2012 3:35 PM
To: 'Eric Downing'; 'Chris Provencal'
Cc: psmith@dartaero.com
Subject: RE: D206-667-201

Eric,

As discussed, tube is acceptable with only 9 passes.

David

From: Eric Downing [<mailto:edowning@dartaero.com>]
Sent: March-30-12 8:09 AM
To: 'David Shepherd'; Chris Provencal
Cc: psmith@dartaero.com
Subject: D206-667-201

Hello David

I have a D206-667-201 cross tube that has been bent with 9 passes not the required 12 as asked on the Drawing. Is this acceptable? I have attached the dim sheet for you to review. Crushing is at minimal and all dims are within the allowed tolerance.

Please let me know

Thanks

Eric Downing
QC COORDINATOR
DART AEROSPACE
EDOWNING@DARTAERO.COM

